

# Noble Energy (Rockies)

Garfield County, CO

Sec. 7-T8S-R95W (SGV 7K PAD)

Federal 7-33D - A 5

Wellbore #1

Plan: Plan #1 Proposal

## Sperry Drilling Services

### Proposal Report

10 August, 2009

Well Coordinates: 571,832.19 N, 1,282,898.83 E (39° 22' 33.51" N, 108° 02' 13.36" W)

Ground Level: 6,503.00 ft

Local Coordinate Origin:

Centered on Well Federal 7-33D - Slot A 5

Viewing Datum:

RKB 24' @ 6527.00ft

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

**HALLIBURTON**

**Plan Report for Federal 7-33D - Plan #1 Proposal**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Federal 7-33D S. Hardline</b>										
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Kickoff at 225.00ft</b>										
300.00	1.50	119.91	299.99	-0.49	0.85	0.98	2.00	2.00	0.00	119.91
400.00	3.50	119.91	399.89	-2.66	4.63	5.34	2.00	2.00	0.00	0.00
500.00	5.50	119.91	499.58	-6.58	11.43	13.17	2.00	2.00	0.00	0.00
537.00	6.24	119.91	536.38	-8.46	14.71	16.95	2.00	2.00	0.00	0.00
<b>Build Rate = 2.00°/100ft</b>										
600.00	7.50	119.91	598.93	-12.22	21.24	24.47	2.00	2.00	0.00	0.00
700.00	9.50	119.91	697.83	-19.59	34.05	39.23	2.00	2.00	0.00	0.00
800.00	11.50	119.91	796.15	-28.68	49.85	57.43	2.00	2.00	0.00	0.00
848.45	12.47	119.91	843.54	-33.70	58.57	67.47	2.00	2.00	0.00	0.00
<b>End Build at 848.45ft</b>										
900.00	12.47	119.91	893.87	-39.25	68.22	78.58	0.00	0.00	0.00	0.00
1,000.00	12.47	119.91	991.52	-50.02	86.93	100.14	0.00	0.00	0.00	0.00
1,100.00	12.47	119.91	1,089.16	-60.78	105.65	121.70	0.00	0.00	0.00	0.00
1,200.00	12.47	119.91	1,186.80	-71.55	124.36	143.26	0.00	0.00	0.00	0.00
1,300.00	12.47	119.91	1,284.44	-82.32	143.08	164.82	0.00	0.00	0.00	0.00
1,400.00	12.47	119.91	1,382.08	-93.09	161.79	186.38	0.00	0.00	0.00	0.00
1,500.00	12.47	119.91	1,479.72	-103.85	180.51	207.94	0.00	0.00	0.00	0.00
<b>8 5/8" Casing Pt.</b>										
1,600.00	12.47	119.91	1,577.36	-114.62	199.22	229.50	0.00	0.00	0.00	0.00
1,700.00	12.47	119.91	1,675.00	-125.39	217.94	251.06	0.00	0.00	0.00	0.00
1,800.00	12.47	119.91	1,772.65	-136.16	236.65	272.62	0.00	0.00	0.00	0.00
1,900.00	12.47	119.91	1,870.29	-146.92	255.37	294.18	0.00	0.00	0.00	0.00
2,000.00	12.47	119.91	1,967.93	-157.69	274.08	315.73	0.00	0.00	0.00	0.00
2,100.00	12.47	119.91	2,065.57	-168.46	292.79	337.29	0.00	0.00	0.00	0.00
2,200.00	12.47	119.91	2,163.21	-179.23	311.51	358.85	0.00	0.00	0.00	0.00
2,300.00	12.47	119.91	2,260.85	-189.99	330.22	380.41	0.00	0.00	0.00	0.00
2,400.00	12.47	119.91	2,358.49	-200.76	348.94	401.97	0.00	0.00	0.00	0.00
2,500.00	12.47	119.91	2,456.13	-211.53	367.65	423.53	0.00	0.00	0.00	0.00
2,528.00	12.47	119.91	2,483.47	-214.54	372.89	429.57	0.00	0.00	0.00	0.00
<b>12.47 Inclination</b>										
2,600.00	12.47	119.91	2,553.78	-222.30	386.37	445.09	0.00	0.00	0.00	0.00
2,700.00	12.47	119.91	2,651.42	-233.06	405.08	466.65	0.00	0.00	0.00	0.00
2,800.00	12.47	119.91	2,749.06	-243.83	423.80	488.21	0.00	0.00	0.00	0.00
2,900.00	12.47	119.91	2,846.70	-254.60	442.51	509.77	0.00	0.00	0.00	0.00
3,000.00	12.47	119.91	2,944.34	-265.36	461.23	531.32	0.00	0.00	0.00	0.00
3,100.00	12.47	119.91	3,041.98	-276.13	479.94	552.88	0.00	0.00	0.00	0.00
3,200.00	12.47	119.91	3,139.62	-286.90	498.66	574.44	0.00	0.00	0.00	0.00
3,300.00	12.47	119.91	3,237.27	-297.67	517.37	596.00	0.00	0.00	0.00	0.00
3,400.00	12.47	119.91	3,334.91	-308.43	536.09	617.56	0.00	0.00	0.00	0.00
3,500.00	12.47	119.91	3,432.55	-319.20	554.80	639.12	0.00	0.00	0.00	0.00
3,600.00	12.47	119.91	3,530.19	-329.97	573.52	660.68	0.00	0.00	0.00	0.00
3,700.00	12.47	119.91	3,627.83	-340.74	592.23	682.24	0.00	0.00	0.00	0.00
3,792.35	12.47	119.91	3,718.00	-350.68	609.51	702.15	0.00	0.00	0.00	0.00
<b>Williams Fork</b>										
3,800.00	12.47	119.91	3,725.47	-351.50	610.95	703.80	0.00	0.00	0.00	0.00
3,900.00	12.47	119.91	3,823.11	-362.27	629.66	725.36	0.00	0.00	0.00	0.00
4,000.00	12.47	119.91	3,920.75	-373.04	648.38	746.91	0.00	0.00	0.00	0.00
4,100.00	12.47	119.91	4,018.40	-383.81	667.09	768.47	0.00	0.00	0.00	0.00
4,200.00	12.47	119.91	4,116.04	-394.57	685.81	790.03	0.00	0.00	0.00	0.00
4,208.44	12.47	119.91	4,124.28	-395.48	687.38	791.85	0.00	0.00	0.00	0.00
<b>Begin Drop at 4208.44ft</b>										
4,300.00	11.10	119.91	4,213.91	-404.81	703.59	810.52	1.50	-1.50	0.00	180.00

**Plan Report for Federal 7-33D - Plan #1 Proposal**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
4,400.00	9.60	119.91	4,312.28	-413.76	719.16	828.45	1.50	-1.50	0.00	180.00
4,500.00	8.10	119.91	4,411.09	-421.43	732.48	843.81	1.50	-1.50	0.00	180.00
4,600.00	6.60	119.91	4,510.26	-427.81	743.57	856.57	1.50	-1.50	0.00	180.00
4,624.00	6.24	119.91	4,534.11	-429.14	745.89	859.25	1.50	-1.50	0.00	-180.00
<b>Drop Rate = 1.50°/100ft</b>										
4,700.00	5.10	119.91	4,609.74	-432.89	752.39	866.74	1.50	-1.50	0.00	180.00
4,800.00	3.60	119.91	4,709.45	-436.66	758.96	874.31	1.50	-1.50	0.00	180.00
4,900.00	2.10	119.91	4,809.32	-439.14	763.26	879.26	1.50	-1.50	0.00	180.00
5,000.00	0.60	119.91	4,909.29	-440.31	765.30	881.61	1.50	-1.50	0.00	180.00
5,039.55	0.00	119.91	4,948.84	-440.41	765.48	881.81	1.50	-1.50	0.00	-180.00
<b>Federal 7-33D Plan #1 Zone Tgt</b>										
5,039.71	0.00	0.00	4,949.00	-440.41	765.48	881.81	1.50	-1.50	0.00	-180.00
<b>End Drop at 5039.71ft - Top of Gas - Federal 7-33D Plan #1 Driller's Tgt</b>										
5,100.00	0.16	243.43	5,009.29	-440.45	765.40	881.77	0.27	0.27	0.00	243.43
5,200.00	0.43	243.43	5,109.29	-440.68	764.94	881.51	0.27	0.27	0.00	0.00
5,300.00	0.70	243.43	5,209.28	-441.13	764.05	881.01	0.27	0.27	0.00	0.00
5,400.00	0.97	243.43	5,309.27	-441.78	762.74	880.27	0.27	0.27	0.00	0.00
5,500.00	1.24	243.43	5,409.26	-442.65	761.01	879.29	0.27	0.27	0.00	0.00
5,600.00	1.51	243.43	5,509.23	-443.72	758.86	878.07	0.27	0.27	0.00	0.00
5,700.00	1.78	243.43	5,609.18	-445.01	756.29	876.62	0.27	0.27	0.00	0.00
5,800.00	2.05	243.43	5,709.13	-446.51	753.30	874.93	0.27	0.27	0.00	0.00
5,900.00	2.32	243.43	5,809.06	-448.21	749.88	872.99	0.27	0.27	0.00	0.00
6,000.00	2.59	243.43	5,908.96	-450.13	746.05	870.83	0.27	0.27	0.00	0.00
6,100.00	2.86	243.43	6,008.85	-452.26	741.79	868.42	0.27	0.27	0.00	0.00
6,132.78	2.95	243.43	6,041.59	-453.00	740.31	867.58	0.27	0.27	0.00	0.00
6,200.00	2.77	243.43	6,108.72	-454.50	737.31	865.88	0.27	-0.27	0.00	180.00
6,295.38	2.51	243.43	6,204.00	-456.47	733.38	863.66	0.27	-0.27	0.00	180.00
<b>Cameo</b>										
6,300.00	2.49	243.43	6,208.62	-456.56	733.20	863.56	0.27	-0.27	0.00	-180.00
6,400.00	2.22	243.43	6,308.53	-458.40	729.52	861.48	0.27	-0.27	0.00	180.00
6,500.00	1.95	243.43	6,408.47	-460.02	726.27	859.64	0.27	-0.27	0.00	180.00
6,600.00	1.67	243.43	6,508.42	-461.43	723.45	858.05	0.27	-0.27	0.00	180.00
6,627.59	1.60	243.43	6,536.00	-461.79	722.75	857.65	0.27	-0.27	0.00	-180.00
<b>Rollins</b>										
6,700.00	1.40	243.43	6,608.38	-462.63	721.05	856.69	0.27	-0.27	0.00	180.00
6,800.00	1.12	243.43	6,708.36	-463.62	719.09	855.58	0.27	-0.27	0.00	180.00
6,900.00	0.85	243.43	6,808.34	-464.39	717.54	854.71	0.27	-0.27	0.00	180.00
7,000.00	0.58	243.43	6,908.34	-464.94	716.43	854.08	0.27	-0.27	0.00	180.00
7,100.00	0.30	243.43	7,008.33	-465.29	715.74	853.69	0.27	-0.27	0.00	180.00
7,200.00	0.03	243.43	7,108.33	-465.42	715.48	853.54	0.27	-0.27	0.00	180.00
7,210.67	0.00	0.00	7,119.00	-465.42	715.48	853.54	0.27	-0.27	0.00	180.00
<b>Federal 7-33D Plan #1 BH Tgt</b>										

**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
225.00	225.00	0.00	0.00	Kickoff at 225.00ft
537.00	536.38	-8.46	14.71	Build Rate = 2.00°/100ft
848.45	843.54	-33.70	58.57	End Build at 848.45ft
2,528.00	2,483.47	-214.54	372.89	12.47 Inclination
4,208.44	4,124.28	-395.48	687.38	Begin Drop at 4208.44ft
4,624.00	4,534.11	-429.14	745.89	Drop Rate = 1.50°/100ft
5,039.71	4,949.00	-440.41	765.48	End Drop at 5039.71ft
7,210.67	7,119.00	-465.42	715.48	Total Depth = 7210.67ft

## Plan Report for Federal 7-33D - Plan #1 Proposal

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	Federal 7-33D Plan #1 BH Tgt	123.04	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	7,210.67	Plan #1 Proposal	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,500.00	1,479.72	8 5/8" Casing Pt.	8-5/8	11

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,792.35	3,718.00	Williams Fork		0.00	
5,039.71	4,949.00	Top of Gas		0.00	
6,295.38	6,204.00	Cameo		0.00	
6,627.59	6,536.00	Rollins		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Federal 7-33D Plan #1 Driller's Tgt	4,949.00	-440.41	765.48	Rectangle
Federal 7-33D Plan #1 BH Tgt	7,119.00	-465.42	715.48	Point
Federal 7-33D S. Hardline	0.00	-22.49	0.58	Polygon
Federal 7-33D Plan #1 Zone Tgt	4,949.00	-465.42	715.48	Rectangle

## North Reference Sheet for Sec. 7-T8S-R95W (SGV 7K PAD) - Federal 7-33D - Wellbore #1

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to RKB 24' @ 6527.00ft. Northing and Easting are relative to Federal 7-33D - Slot A 5

Coordinate System is US State Plane 1927 (Exact solution), Colorado Central 502 using datum NAD 1927 (NADCON CONUS), ellipsoid Clarke 1866

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.50°, Longitude Origin: 0° 0' 0.000 E°, Latitude Origin: 39° 45' 0.000 N°

False Easting: 2,000,000.00ft, False Northing: 0.00ft, Scale Reduction: 0.99994740

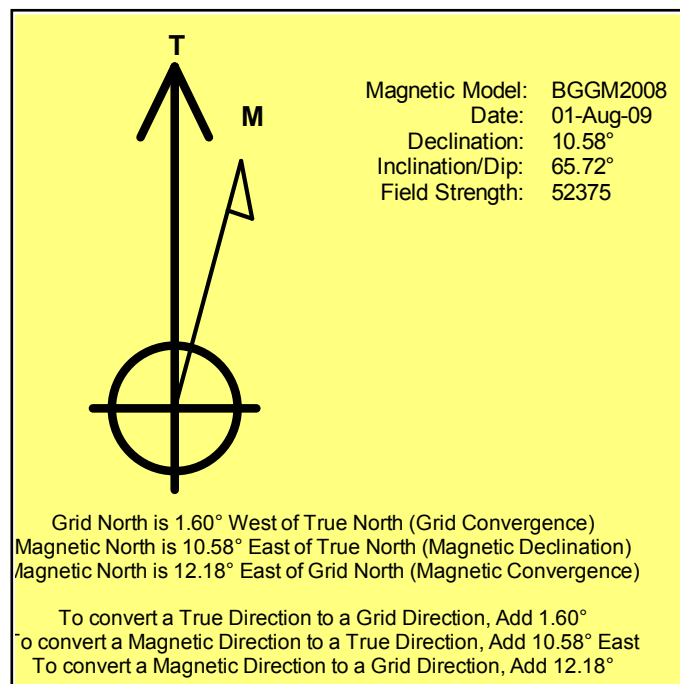
Grid Coordinates of Well: 571,832.19 ft N, 1,282,898.83 ft E

Geographical Coordinates of Well: 39° 22' 33.51" N, 108° 02' 13.36" W

Grid Convergence at Surface is: -1.60°

Based upon Minimum Curvature type calculations, at a Measured Depth of 7,210.67ft the Bottom Hole Displacement is 853.54ft in the Direction of 123.04° (True).

Magnetic Convergence at surface is: -12.18° ( 1 August 2009, , BGGM2008)



Project: Garfield County, CO  
Site: Sec. 7-T8S-R95W (SGV 7K PAD)

Well: Federal 7-33D

Wellbore: Wellbore #1

Plan: Plan #1 Proposal

# Noble Energy (Rockies)

HALLIBURTON

## SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSoc	
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	225.00	0.00	0.00	225.00	0.00	0.00	0.00	0.00	0.00	
3	848.45	12.47	119.91	843.54	-33.70	58.57	2.00	119.91	67.47	
4	4208.44	12.47	119.91	4124.28	-395.48	687.38	0.00	0.00	791.85	
5	5039.71	0.00	0.00	4949.00	-440.41	765.48	1.50	180.00	881.81	Federal 7-33D Plan #1 Driller's Tgt
6	6132.78	2.95	243.43	6041.59	-453.00	740.31	0.27	243.43	867.58	
7	7210.67	0.00	0.00	7119.00	-465.42	715.48	0.27	180.00	853.54	Federal 7-33D Plan #1 BH Tgt

## WELL DETAILS: Federal 7-33D

Ground Level:	6503.00			
Northing	Easting	Latitude	Longitude	A 5
	571832.19	1282898.83	39° 22' 33.51"N 107° 2' 13.358 W	

## FORMATION TOP DETAILS

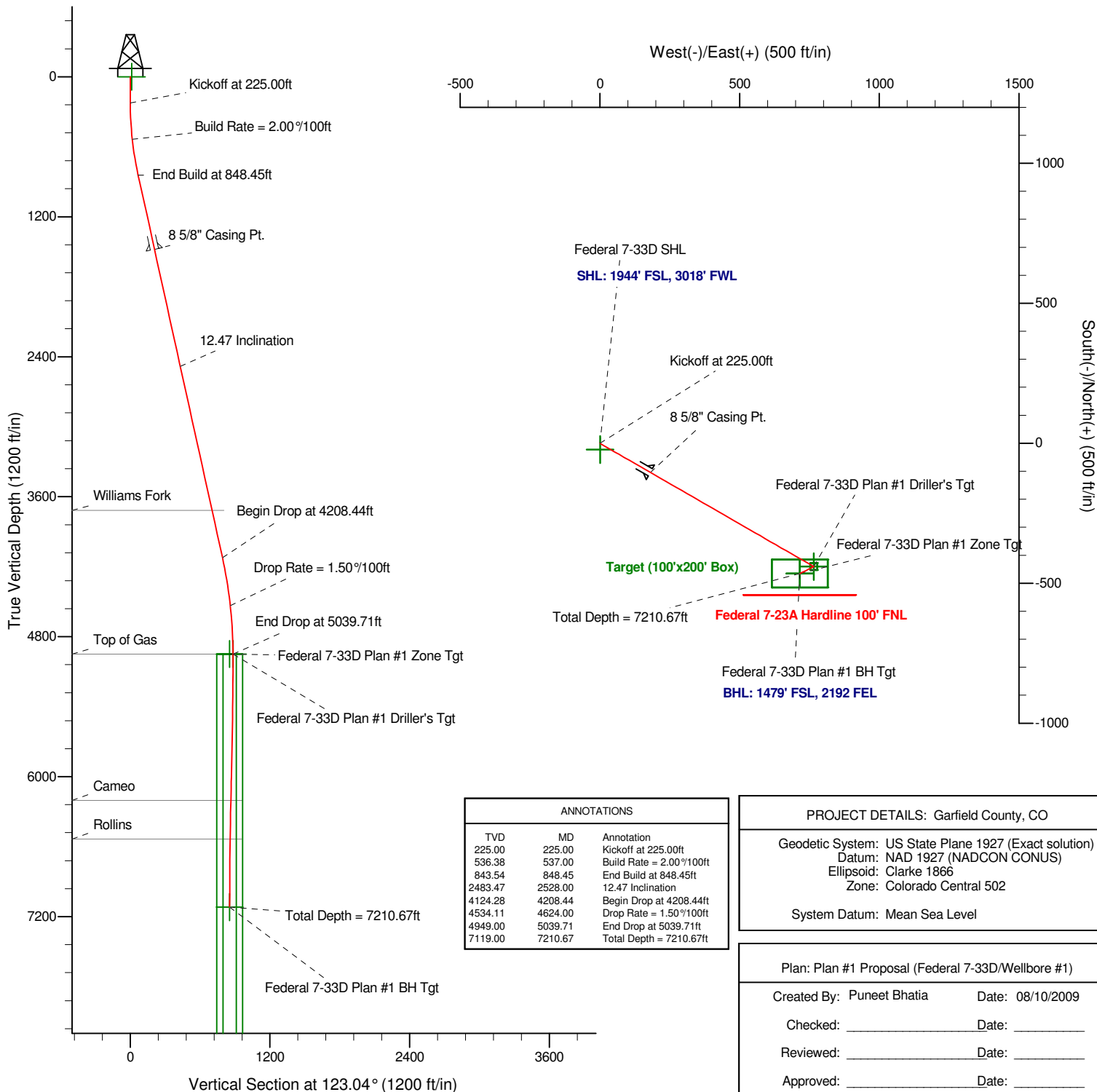
TVDPath	MDPath	Formation
3718.00	3792.35	Williams Fork
4949.00	5039.71	Top of Gas
6204.00	6295.38	Cameo
6536.00	6627.59	Rollins

## WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
Federal 7-33D S. Hardline	0.00	-22.49	0.58	Polygon
Federal 7-33D Plan #1 Driller's Tgt	4949.00	-440.41	765.48	Rectangle (Sides: L25.00 W25.00)
Federal 7-33D Plan #1 Zone Tgt	4949.00	-465.42	715.48	Rectangle (Sides: L100.00 W200.00)
Federal 7-33D Plan #1 BH Tgt	7119.00	-465.42	715.48	Point



Azimuths to True North  
Magnetic North: 10.58°  
Magnetic Field  
Strength: 52375.5nT  
Dip Angle: 65.72°  
Date: 8/1/2009  
Model: BGGM2008



## ANNOTATIONS

TVD	MD	Annotation
225.00	225.00	Kickoff at 225.00ft
536.38	537.00	Build Rate = 2.00%/100ft
843.54	848.45	End Build at 848.45ft
2483.47	2528.00	12.47 Inclination
4124.28	4208.44	Begin Drop at 4208.44ft
4534.11	4624.00	Drop Rate = 1.50%/100ft
4949.00	5039.71	End Drop at 5039.71ft
7119.00	7210.67	Total Depth = 7210.67ft

## PROJECT DETAILS: Garfield County, CO

Geodetic System: US State Plane 1927 (Exact solution)  
Datum: NAD 1927 (NADCON CONUS)  
Ellipsoid: Clarke 1866  
Zone: Colorado Central 502

System Datum: Mean Sea Level

## Plan: Plan #1 Proposal (Federal 7-33D/Wellbore #1)

Created By: Puneet Bhatia Date: 08/10/2009

Checked: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

Approved: \_\_\_\_\_ Date: \_\_\_\_\_